AF/2814

TRANSMITTAL OF APPEAL BRIEF

Docket No.
8733.213.00-US

In re Application of: Jin JANG et al.

Application No.	Filing Date	Examiner	Group Art Unit
09/497,508	February 4, 2000	W. Louie	2814

Invention: POLYCRYSTALLINE SILICON FILM CONTAINING Ni

TO THE COMMISSIONER OF PATENTS:

Transmitted herewith in triplicate is the Appeal Brief in this application, with respect to the Notice of Appeal filed: August 13, 2002 .

The fee for filing this Appeal Brief is 320.00 .

[X] Large Entity [ ] Small Entity

[X] A check in the amount of 320.00 is enclosed.

[ ] Charge the amount of the fee to Deposit Account No. _____ .
This sheet is submitted in duplicate.

[X] The Commissioner is hereby authorized to charge any additional fees that may be required or credit any overpayment to Deposit Account No. 50-0911 .
This sheet is submitted in duplicate.

Dated: August 13, 2002

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PTO/SB/17 (11-01)
Approved for use through 10/31/2002. OMB 0651-0032
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

FEE TRANSMITTAL for FY 2002

Patent fees are subject to annual revision.

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 320.00

Complete if Known	
Application Number	09/497,508
Filing Date	February 4, 2000
First Named Inventor	Jin JANG et al.
Examiner Name	Wai Sing Louie
Group Art Unit	2814
Attorney Docket No.	8733.213

METHOD OF PAYMENT *(check all that apply)*

☒ Check ☐ Credit Card ☐ Money Order ☐ Other ☐ None

☐ Deposit Account

Deposit Account Number: 50-0911

Deposit Account Name: McKenna Long & Aldridge LLP

The Commissioner is hereby authorized to: *(check all that apply)*

☐ Charge fee(s) indicated below ☒ Credit any overpayments

☐ Charge any additional fee(s) during the pendency of this application

☐ Charge fee(s) indicated below, **except for the filing fee**

to the above-identified deposit account.

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	740	201	370	Utility filing fee	
106	330	206	165	Design filing fee	
107	510	207	255	Plant filing fee	
108	740	208	370	Reissue filing fee	
114	160	214	80	Provisional filing fee	

SUBTOTAL (1) ($) 0.00

2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

		Extra Claims		Fee from below		Fee Paid
Total Claims	-20** =		x		=	0.00
Independent Claims	-3** =		x		=	0.00
Multiple Dependent					=	

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	84	202	42	Independent claims in excess of 3
104	280	204	140	Multiple dependent claim, if not paid
109	84	209	42	** Reissue independent claims over original patent
110	18	210	9	** Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0.00

***or number previously paid, if greater; For Reissues, see above*

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge – late filing fee or oath	
127	50	227	25	Surcharge – late provisional filing fee or cover sheet.	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for *ex parte* reexamination	
112	920*	112	920*	Requesting publication of SIR prior to Examiner action	
113	1,840*	113	1,840*	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	400	216	200	Extension for reply within second month	
117	920	217	460	Extension for reply within third month	
118	1,440	218	720	Extension for reply within fourth month	
128	1,960	228	980	Extension for reply within fifth month	
119	320	219	160	Notice of Appeal	
120	320	220	160	Filing a brief in support of an appeal	320.00
121	280	221	140	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive – unavoidable	
141	1,280	241	640	Petition to revive - unintentional	
142	1,280	242	640	Utility issue fee (or reissue)	
143	460	243	230	Design issue fee	
144	620	244	310	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Processing fee under 37 CFR 1.17(q)	
126	180	126	180	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	740	246	370	Filing a submission after final rejection (37 CFR 1.129(a))	
149	740	249	370	For each additional invention to be examined (37CFR 1.129(b))	
179	740	279	370	Request for Continued Examination (RCE)	
169	900	169	900	Request for expedited examination of a design application	
Other fee (specify)	131			Basic Filing fee - Utility (CPA)	

*Reduced by Basic Filing Fee Paid **SUBTOTAL (3)** ($) 320.00

SUBMITTED BY				Complete *(if applicable)*	
Name (Print/Type)	Teresa M. Arroyo	*Registration No. (Attorney/Agent)*	50,015	*Telephone*	(202) 496-7371
Signature	Teresa M. Arroyo			*Date*	August 13, 2002

#11/4 Appeal Brief 8/20/02 C. Davis

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re PATENT APPLICATION of

Jin JANG et al. Group Art Unit: 2814

Serial No.: 09/497,508 Examiner: Wai Sing LOUIE

Filed: February 4, 2000

Title: POLYCRYSTALLINE SILICON FILM CONTAINING Ni

Box AF
Honorable Commissioner for Patents
Washington, D.C. 20231

APPEAL BRIEF

Sir:

In response to a Final Rejection of all pending claims that was mailed on January 14, 2002, and in support of a "Notice of Appeal" filed on June 13, 2002, Appellant hereby submits this Appeal Brief.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefore, are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

Real Party in Interest

The real party of interest is LG. Philips LCD Co. Ltd., a South Korean Corporation.

Related Appeals and Interferences

There are no related appeals or interferences known to the undersigned attorney.

Status of Claims

Claims 1-9 were originally filed. Claim 8 is canceled. Claims 1-7 and 9 are pending and stand rejected. The rejections of claims 1-7 and 9 are appealed. A copy of the claims involved in the present appeal is attached hereto as Appendix A.

Status of Amendments

The Appellant submitted an Amendment Under 37 CFR 1.116 on April 15, 2002. In response, the Examiner mailed an Advisory Action dated May 20, 2002, which did not indicate whether the amendment had been entered, but indicated that it failed to place the application in condition for allowance.

Therefore, in view of a Notice of Appeal filed on June 13, 2002, and in view of this Appeal Brief, the April 15, 2002 "Amendment After Final" should be entered.

Summary of Invention

The present invention relates to a polycrystalline silicon film which is crystallized with a metal induction (rapid thermal treatment, thermal treatment being applied by electric field or rapid thermal treatment being applied by electric field) containing a small amount of Ni in all portions of a thin film. The completed polycrystalline silicon becomes needle-shaped silicon crystallites and can be used in the active layer of an element such as a thin film transistor, solar battery etc, without using surface etching before or after the crystallization process.

If the density of a nickel atom in the thin film deviates from the specified density indicated by the present invention, the polycrystalline silicon cannot become needle-shaped crystal particles and the electric characteristics markedly declines.

To put it concretely, if an amount less than the minimum amount of Ni indicated in the present invention is contained, a polycrystalline silicon thin film forms the shape of dendrite crystallites, linear-shaped solid phase crystallization. It is impossible for direct use for manufacturing an element of high performance without a separate treatment such as high thermal treatment, rapid thermal treatment, laser irradiation etc, due to many defects existing between the border of the crystallite and the crystal. Also, if an amount more than the maximum amount of Ni indicated by the present invention is contained, needle-shaped silicon crystallites forming the thin film get remarkably smaller than a shape of needle in its size. The entire of thin film is filled with the crystallites formed in the shape of small circular appearance. Accordingly, the contained nickel cannot be used for manufacturing an element due to electric and structural defects.

Issues

The first issue on appeal is whether claims 1, 3, 6, 9 were properly rejected under 35 USC 112, first paragraph as introducing new matter to the specification and claims and not describing in the specification how to make and/or use the invention by amending "bar-like silicon crystallites" with the term "needle-shaped silicon crystallites".

The second issue on appeal is whether claims 1-7, and 9 were properly rejected under 35 USC 103(a) as being unpatentable over Ohtani et al. (US Patent No. 5,612,250) in view of Fonash et al. (US Patent No. 5,994,164).

Grouping of Claims

Appellant respectfully asserts that on the first issue claims 1, 3, 6, and 9 stand or fall together.

Appellant respectfully asserts that on the second issue claims 1-7, and 9 stand or fall together.

Arguments

First Issue

Claims 1, 3, 6, 9 were improperly rejected under 35 USC § 112, first paragraph as introducing new matter to the specification and claims and not describing in the specification how to make and/or use the invention by amending "bar-like silicon crystallites" with the term "needle-shaped silicon crystallites".

The first paragraph of 35 USC § 112 sets forth two separate requirements. First, the claims must set forth the subject matter that applicants regard as their invention. Second, the claims must particularly point out and distinctly define the metes and bounds of the subject matter that will be protected by the patent grant. Further, when the specification states the meaning that a term in the claim is intended to have, the claim is examined using that meaning, in order to achieve a complete exploration of the applicant's invention and its relation to the prior art. *In re Zletz*, 893 F.2d 319, 13 USPQ2d 1320 (Fed. Cir. 1989).

Claims 1, 3, 6, and 9 set forth that needle-shaped silicon crystallites is part of the invention. Appellant sought to more clearly define the shape of the crystallites in filing the

amendment changing "bar-like" to "needle-shaped". The specification states the meaning that "needle-shaped" is intended to have by describing the growth of the crystallites shown in the figures. The term "needle-shaped" used to describe the crystallites is not repugnant to the usual meaning. For example, the term "needle-shaped" has been used in the claims of several patents, including at least U.S. Patent Nos. 6,365,933, 6,194,254, 6,120,891 to describe the growth of the crystallites in a silicon film containing metal. Appellants respectfully submit that the terminology "needle-shaped" would be understood by one of ordinary skill in this art. Further, the description of the crystallites shown in the figures as being "bar-like" or "needle-shaped" should be interpreted as intended by Appellants since they are their own lexicographers. See *In re Hill*, 161 F.2d 367, 73 USPQ 482 (CCPA 1947).

Appellants respectfully submit that the amendment changing "bar-like" to "needle-shaped" to overcome the 35 USC § 112 rejection is not new matter introduced into the specification and that the specification describes how to make and/or use the invention. Appellants request that the rejection under 35 USC § 112, first paragraph be withdrawn.

Second Issue

Claims 1-7, and 9 were improperly rejected under 35 USC § 103(a) as being unpatentable over Ohtani et al. (US Patent No. 5,612,250) in view of Fonash et al. (US Patent No. 5,994,164).

To establish a *prima facie* case of obviousness under 35 USC § 103, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim limitations. Second, there must be some suggestion or motivation in the references themselves to modify the reference or to combine reference teachings. Third, there must be a reasonable expectation of success for the modification or combination of references. Further, the teaching or suggestion to make the modification or combination of prior art and the reasonable expectation of success must both be found in the prior art, and not based on Applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Additionally, there must be particular finding as to the specific understanding or principle within the knowledge of a skilled artisan that would have motivated one with no knowledge to the claimed invention to combine or modify references. *In re Kotzab*, 217 F.3d 1365, 55 U.S.P.Q.2d 1313 (Fed. Cir. 2000). Also, see M.P.E.P. § 2143.

In order to obtain the density ranges of Ni atoms in claims 1, 3, 6, and 9, the silicon film requires a separate process as described at column 7, lines 3-23 of Ohtani et al. Further, the value of the electrical conductivity activation energy is not disclosed as admitted by the Examiner. Thus, Ohtani et al. does not teach or suggest all the claim limitations.

The Examiner cites Fonash et al. in an attempt to cure the deficiencies of Ohtani et al. Fonash et al. may recite an electrical conductivity activation energy similar to the value in claims 1, 3, 6, and 9, but Fonash et al. uses solid phase crystallization (SPC) rather than metal induced crystallization (MIC) described in the specification of this application and apparent from the recitation of Ni atoms in the claims. Fonash et al. does not teach or suggest the claimed invention as a whole. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); see also *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976). Appellants respectfully submit that Fonash et al. fails to cure the deficiencies of Ohtani et al.

Furthermore, the Examiner has not pointed out a particular finding as to the specific understanding or principle within the knowledge of a skilled artisan, either expressly or by implication that would have motivated one with no knowledge to combine or modify Ohtani et al. Accordingly, no proper motivation or suggestion is found in Fonash et al. for one of ordinary skill in the art to combine the teachings. There is no reasonable expectation of success by combining the two teachings. Such combination is suggested only by the claimed invention and that combining is considered impermissible hindsight.

Fonash et al. is not attempting to solve similar problems with the same solution. "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole', which should always be considered in determining the obviousness of an invention under 35 USC § 103." *In re Sponnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969). However, "discovery of the cause of a problem . . . does not always result in a patentable invention. . . . [A] different situation exists where the solution is obvious from prior art which contains the same solution for a similar problem." *In re Wiseman*, 596 F.2d 1019, 1022, 201 USPQ 658, 661 (CCPA 1979) (emphasis in original).

Through the combination of references used by the Examiner, she has taken a specific aspect of the claim, i.e., electrical conductive activation energy, to be the only advantage of the invention, and disregarded the other elements of the claims.

Accordingly, Appellant respectfully requests withdrawal of the rejection based on the combination of references. Appellant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness.

In view of the foregoing arguments, Appellant respectfully requests that the Board of Appeals overturn the Examiner's rejections and objections and allow claims 1-7, and 9.

Respectfully submitted,

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